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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,274	06/25/2003	Paul O'Connor	ACH2947US	4476

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EXAMINER

ILDEBRANDO, CHRISTINA A

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 07/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/603,274	O'CONNOR ET AL.	
	Examiner	Art Unit	
	Christina Ildebrando	1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-14, drawn to a catalyst composition, classified in class 502, subclass 68.
 - II. Claim 15, drawn to an FCC process, classified in class 208, subclass 113.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product as claimed can be used in a materially different process of use, such as a catalyst for the reduction of nitrogen oxides.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II and vice versa, restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Mr. Louis Morris on June 23, 2004 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-14. Affirmation of this election must be made by applicant in replying to this Office action. Claim 15 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 0 278 535.

EP 0 278 535 discloses a catalyst composition useful in hydrocarbon conversion processes. The catalyst composition comprises a catalytically active material, a sulfur oxide binding material and a matrix material (page 2, lines 1-5). Suitable sulfur oxide materials include anionic clays (page 3, lines 25-55 and page 4, lines 20-27) which may

Art Unit: 1725

be loaded with promoters, including the rare earth metals lanthanum and cerium or copper or chromium (page 4, lines 25-48). Suitable catalytically active materials include zeolites (page 4, lines 49-57). Suitable matrix materials include silica, silica-alumina, and alumina and may further include a clay such as kaolin (page 5, lines 5-11). It is taught that the catalyst composition contains anionic clay in an amount in the range of 0.1-50%, preferably 1-30%, and more preferably 3-15%, by weight, and contains zeolite in amounts in the range of 5-50%, preferably 10-30%, by weight, with the balance being the matrix material (page 5, lines 45-53). In an example, the reference details the preparation of a catalyst composition containing 10% by weight of a cerium loaded anionic clay, 20% by weight of a USY zeolite, and 70% by weight of a matrix consisting of 85% by weight of kaolin clay and 15% by weight of alumina (page 13, Example 7).

As each and every element of the claimed invention is taught in the prior art as recited above, the claims are anticipated by EP 0 278 535.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/12570 in view of EP 0 278 535.

WO 01/12570 discloses anionic clay containing compositions and a method for preparing anionic clay. The anionic clay contains magnesium and aluminum and is formed by preparing a precursor mixture, shaping the precursor mixture to obtain shaped bodies, optionally thermally treating the shaped bodies and aging to obtain crystalline anionic clay bodies (page 2, lines 24-30). Suitable magnesium sources include magnesium oxide, magnesium hydroxide, magnesium carbonate, magnesium bicarbonate, magnesium acetate, and magnesium hydroxy acetate (page 6, lines 4-10). Suitable aluminum sources include water insoluble sources (page 3, lines 23-30). It is taught that the anionic clay may include additives, such as Ce, La, Group VI metals, Group VII metals, and/or transition metals (page 9, lines 24-30). These additives may be added in any of the preparation steps, and it is taught that the additives can be added before, after, or during any aging step (page 9, lines 10-30 and page 10, lines 1-5). It is taught that the anionic clay compositions may be used in combination with conventional catalyst components such as matrix materials (i.e. kaolin, alumina, silica-alumina, etc.) and molecular sieve materials (page 10, lines 20-25 and the Examples).

The difference between the reference and the claims is that the reference does not disclose the relative amounts of the metal doped anionic clay, zeolite, kaolin, alumina, and optionally silica, present in the composition.

EP 0 278 535 discloses a catalyst composition useful in hydrocarbon conversion processes. The catalyst composition comprises a catalytically active material, a sulfur oxide binding material and a matrix material (page 2, lines 1-5). Suitable sulfur oxide materials include anionic clays (page 3, lines 25-55 and page 4, lines 20-27) which may

Art Unit: 1725

be loaded with promoters, including the rare earth metals lanthanum and cerium or copper or chromium (page 4, lines 25-48). Suitable catalytically active materials include zeolites (page 4, lines 49-57). Suitable matrix materials include silica, silica-alumina, and alumina and may further include a clay such as kaolin (page 5, lines 5-11). It is taught that the catalyst composition contains anionic clay in an amount in the range of 0.1-50%, preferably 1-30%, and more preferably 3-15%, by weight, and contains zeolite in amounts in the range of 5-50%, preferably 10-30%, by weight, with the balance being the matrix material (page 5, lines 45-53). In an example, the reference details the preparation of a catalyst composition containing 10% by weight of a cerium loaded anionic clay, 20% by weight of a USY zeolite, and 70% by weight of a matrix consisting of 85% by weight of kaolin clay and 15% by weight of alumina (page 13, Example 7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method and composition taught by the WO reference, in light of the teachings of the EP reference. The WO reference teaches an anionic clay and further suggests that the anionic clay may be combined with additional materials, particularly in compositions for the removal of sulfur oxides in FCC processes. The EP reference suggests that amounts of materials meeting the instantly claimed amounts are suitable for use in compositions for the removal of sulfur oxides in FCC processes. Because of this teaching, one of ordinary skill would have been motivated to use the amounts of materials taught by the EP reference in the composition taught by the WO reference, with a reasonable expectation of success from the combination.

Art Unit: 1725

11. Claims 1-4 and 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stamires et al. in view of EP 0 278 535.

Stamires et al. (2002/0159940) discloses doped anionic clay compositions and a method for preparing doped anionic clay. The anionic clay contains a divalent metal and a trivalent metal and is formed by aging the metal sources in an aqueous suspension to form an anionic clay, thermally treating the clay to form a solid solution and rehydrating the clay to form anionic clay [0075]-[0082]. The reference teaches the use of metal precursors which meet the instant claims. Refer to [0033]-[0045]. It is taught that either precursor may be doped prior to the aging step [0076]. It is taught that additional additives, such as Ce, La, Group VI metals, Group VII metals, and/or transition metals may be added to the composition [0086]. It is taught that the additives can be added during the rehydration step [0082]. It is taught that the anionic clay compositions may be used in combination with conventional catalyst components such as matrix materials (i.e. kaolin, alumina, silica-alumina, etc.) and molecular sieve materials [0091]-[0092].

The difference between the reference and the claims is that the reference does not disclose the relative amounts of the metal doped anionic clay, zeolite, kaolin, alumina, and optionally silica, present in the composition.

EP 0 278 535 discloses a catalyst composition useful in hydrocarbon conversion processes. The catalyst composition comprises a catalytically active material, a sulfur oxide binding material and a matrix material (page 2, lines 1-5). Suitable sulfur oxide materials include anionic clays (page 3, lines 25-55 and page 4, lines 20-27) which may be loaded with promoters, including the rare earth metals lanthanum and cerium or

Art Unit: 1725

copper or chromium (page 4, lines 25-48). Suitable catalytically active materials include zeolites (page 4, lines 49-57). Suitable matrix materials include silica, silica-alumina, and alumina and may further include a clay such as kaolin (page 5, lines 5-11). It is taught that the catalyst composition contains anionic clay in an amount in the range of 0.1-50%, preferably 1-30%, and more preferably 3-15%, by weight, and contains zeolite in amounts in the range of 5-50%, preferably 10-30%, by weight, with the balance being the matrix material (page 5, lines 45-53). In an example, the reference details the preparation of a catalyst composition containing 10% by weight of a cerium loaded anionic clay, 20% by weight of a USY zeolite, and 70% by weight of a matrix consisting of 85% by weight of kaolin clay and 15% by weight of alumina (page 13, Example 7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method and composition taught by Stamires et al., in light of the teachings of the EP reference. Stamires et al. teaches an anionic clay and further suggests that the anionic clay may be combined with additional materials, particularly in compositions for the removal of sulfur oxides in FCC processes. The EP reference suggests that amounts of materials meeting the instantly claimed amounts are suitable for use in compositions for the removal of sulfur oxides in FCC processes. Because of this teaching, one of ordinary skill would have been motivated to use the amounts of materials taught by the EP reference in the composition taught by Stamires et al., with a reasonable expectation of success from the combination.


Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Ildebrando whose telephone number is (571) 272-1176. The examiner can normally be reached on Monday-Friday, 7:30-5, with Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Christina Ildebrando
Patent Examiner
Art Unit 1725
6/24/04

CAI
June 24, 2004